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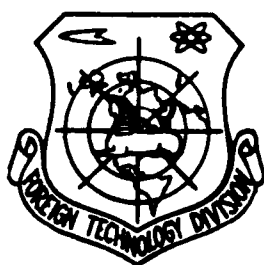


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METHOD OF OBTAINING PHENOL-FURFURAL RESINS

by

D.R. Tursunova, N.U. Rizayev, et al.



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METHOD OF OBTAINING PHENOL-FURFURAL RESINS

By: D.R. Tursunova, N.U. Rizayev, et al.

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Requester: AFAL/VSSC/R.H. Gerzeski

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Block	Italic	Transliteration	Block	Italic	Transliteration
А а	<b>А а</b>	A, a	Р р	<b>Р р</b>	R, r
Б б	<b>Б б</b>	B, b	С с	<b>С с</b>	S, s
В в	<b>В в</b>	V, v	Т т	<b>Т т</b>	T, t
Г г	<b>Г г</b>	G, g	У у	<b>У у</b>	U, u
Д д	<b>Д д</b>	D, d	Ф ф	<b>Ф ф</b>	F, f
Е е	<b>Е е</b>	Ye, ye; E, e*	Х х	<b>Х х</b>	Kh, kh
Ж ж	<b>Ж ж</b>	Zh, zh	Ц ц	<b>Ц ц</b>	Ts, ts
З з	<b>З з</b>	Z, z	Ч ч	<b>Ч ч</b>	Ch, ch
И и	<b>И и</b>	I, i	Ш ш	<b>Ш ш</b>	Sh, sh
Й й	<b>Й й</b>	Y, y	Щ щ	<b>Щ щ</b>	Shch, shch
К к	<b>К к</b>	K, k	Ъ ъ	<b>Ъ ъ</b>	"
Л л	<b>Л л</b>	L, l	Ы ы	<b>Ы ы</b>	Y, y
М м	<b>М м</b>	M, m	Ь ь	<b>Ь ь</b>	'
Н н	<b>Н н</b>	N, n	Э э	<b>Э э</b>	E, e
О о	<b>О о</b>	O, o	Ю ю	<b>Ю ю</b>	Yu, yu
П п	<b>П п</b>	P, p	Я я	<b>Я я</b>	Ya, ya

\*ye initially, after vowels, and after е, ь; e elsewhere.  
When written as ѣ in Russian, transliterate as yě or ě.

## RUSSIAN AND ENGLISH TRIGONOMETRIC FUNCTIONS

Russian	English	Russian	English	Russian	English
sin	sin	sh	sinh	arc sh	$\sinh^{-1}$
cos	cos	ch	cosh	arc ch	$\cosh^{-1}$
tg	tan	th	tanh	arc th	$\tanh^{-1}$
ctg	cot	cth	coth	arc cth	$\coth^{-1}$
sec	sec	sch	sech	arc sch	$\operatorname{sech}^{-1}$
cosec	csc	csch	csch	arc csch	$\operatorname{csch}^{-1}$

Russian	English
rot	curl
lg	log

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Page 1.

METHOD OF OBTAINING PHENOL-FURFURAL RESINS.

D. R. Tursunova, N. U. Rizaev, A. Yu. Yuldashev and Ya. Z. Rakhman-Zade.

Invention relates to improvement of method of obtaining phenol-furfural resins, utilized in different branches of national economy as cationites (for purification of waste water from ions of calcium, magnesium, etc., sorption of different metals).

Method of obtaining phenol-furfural resins by polycondensation of sulfonated phenol with furfural is known; obtained in this case resin has small exchange capacity, low swelling, insufficient strength, which causes low quality of cationites.

Target of present invention is improvement in mechanical properties of phenol-furfural resins and increase in its exchange capacitance.

This target is achieved by conducting of reacting polycondensation of sulfonated phenol with furfurol in electromagnetic field. The exchange capacitance of resin is raised by 25-35%, the

duration of reaction is shortened two times.

Example. For conducting the polycondensation three-necked flask with the agitator and the reflux condenser is placed into electromagnetic field of cylindrical solenoid. Intensity of electromagnetic field is  $23-25 \cdot 10^3$  a/m. With the included agitator in instrument are poured 1 mole of the sulfonated phenol cooled to  $+10^\circ\text{C}$  and 1 mole of freshly prepared furfurol. Reaction occurs at room temperature during 5 min, the temperature of reaction medium is raised to  $50-60^\circ\text{C}$ . The obtained gel of dark color is broken into the small pieces, the excess of free sulfuric acid is neutralized by the saturated solution of soda and at a temperature of  $105^\circ\text{C}$  is dried during 24 h.

Resin (cationite) is activated in a known manner.

Table gives characteristics of obtained cationites.

a) Условия проведения поликонденсации	б) Статическая обмен- ная емкость, мг экв. г	
	0,1 н. NaOH	0,1 н. C.Cl.
1. Электромагнитное поле		
А. Напряженность 23-25 $\cdot 10^3$ а/м	5,5	2,0
Б. Напряженность 10-12 $\cdot 10^3$ а/м	4,5	4,6
2. Без электромагнитного поля	4,0	1,5

Key: (a). Conditions of conducting the polycondensation. (b). Static exchange capacitance ... (1). Electromagnetic field. (1A) intensity 23-25  $\cdot 10^3$  a/m. (1B). Intensity 10-12  $\cdot 10^3$  a/m. (2). Without electromagnetic field.

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#### SUBJECT OF INVENTION.

Method of obtaining phenol-furfural resins by polycondensation of preliminarily cooled sulfonated phenol with furfural, which is characterized by fact that for purpose of improvement in mechanical properties of resin and increase in its exchange capacitance, polycondensation is carried out in electromagnetic field.

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